Flying Safety

HEADQUARTERS, UNITED STATES AIR FORCE • RESTRICTED — FEBRUARY 1953

RESTRICTED

COVER

The photo shows F-86 jet fighters of the 4th Fighter Wing on the line at Langley AFB. Such a picture is appropriate this month because the magazine contains more than the usual number of articles on jet operations.

Incidentally, while on the subject of cover pictures, the editors would like to make it known that FLYING SAFETY Magazine welcomes contributions of suitable cover photos. Credit will be given to the base or photographer submitting a photo used. It need not be an accident picture. This month's photo was made by Cpl. Nick Sourant.

★

OUTSTANDING AIRMEN

Every example of pilot error resulting in an accident is reported in one publication or another. But numerous examples of outstanding feats of airmanship often go unmentioned. Commanders and flying safety officers are invited to tell the editors of FLYING SAFETY about such flights. Whenever superior airmanship, piloting or maintenance saves an airplane or crew from disaster, we want to publish the story to the entire U. S. Air Force. The personnel concerned deserve a "well done" on these pages.

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SHARE YOUR IDEAS

FLYING SAFETY Magazine welcomes comments, criticisms and editorial contributions from all members of the United States Air Force. Readers can help the magazine promote safe flight by offering information on procedures, equipment or training methods that have been effective in decreasing aircraft accidents. Address your letters direct to the Editor, FLYING SAFETY Magazine, Langley Air Force Base, Virginia.

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DEPARTMENT OF THE AIR FORCE

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GET HIS NUMBER!

THE OUTLAW is indifferent to advice. Whether you give him a fast horse, an automobile, or an airplane, he is apt to ride it without regard for the rules.

Sincere efforts have been made in military and civil aviation to educate pilots to the dangers of show-off flying. But it is apparent that educational efforts alone cannot stop the idiot bent on dive-zoom destruction. So other influences are making themselves felt. All over the nation more and more ordinances are written describing certain acts of flying as "endangering life" and "constituting a public nuisance." More and more local authorities are prosecuting flying offenders who they logically consider to be more dangerous than drunks in fast cars.

The reckless driver, for a long time charged as a criminal, may now have for a cell mate the pilot turned buzzer, screwball, flat-hatter or grandstander. Because outlaw pilots do not read or heed safety advice, they do not seem to understand that their violations of flying regulations make them aviation's worst enemies rather than its bravest heroes.

Responsible citizens always call the police if they see anyone attempting manslaughter or suicide. Premeditated diving and zooming in an airplane, whereby persons and property are endangered, should cause the same reaction—the officials who can stop it should be notified.

Reports of observed violations by military or civilian aircraft may be made in flight or from the ground by any person, military or civilian. The machinery is set up to handle such reports with a minimum of delay. It should be possible in many cases that the offending pilot's home station will have full details on the violation before he can land and dream up an alibi.

Reporting a reckless flying incident is as simple as picking up a telephone or radio microphone. And that's exactly what you do. Your verbal flash report should be made to the nearest military or CAA facility—a range station, control tower, airways station, etc. The report should contain all pertinent information regarding the incident, including the time and exact location of the violation, type of aircraft involved and its number. Weather conditions at the time and any other information that will be of value also should be given.

When a flash report is received from an observer on the ground or in the air it is sent at once to the Flight Service Center or the CAA Air Traffic Control Center. Flight Service then notifies the base or civilian agency concerned if the aircraft is identified. If the aircraft is not identified, Flight Service contacts all bases within its area to attempt identification. Commanders at all echelons of command are required to report all incidents of reckless flying. Procedures for ticketing all incidents of reckless flying within the continental limits of the United States is a teamwork proposition between the Air Force, Army, Navy, National Guard, Coast Guard, CAA and civilian facilities, with the Military Flight Service centers acting as the coordinating agencies. (See SR 95-145-1, CNO Ltr. 1040P531, AF Reg. 62-5.)

Although reckless pilots are a minority, their actions do damage of major proportions. Of the total of 360 confirmed violations of USAF flying regulations in the first nine months of 1949, one third of them or 120 cases resulted in aircraft accidents.

If all the safe and conscientious airmen and officers, military and civilian, agree that they have had enough of air recklessness—with its deaths, wrecks and public disfavor—they can quickly get the foolhardy grounded or jailed. And the first step in this effort to eliminate the reckless pilot is to report him.

JET INDOCTRINATION

AIR FORCE personnel have to catch up with jet airplanes. It is apparent that as jets have replaced other types of front-line aircraft, thinking and practices of operations, servicing, weather and air traffic control personnel have not kept pace.

Now this would not be too serious if keeping pace with jet operations was like staying abreast of dress fashions where nothing but pride is hurt by failure to make the change. But lagging behind Air Force developments kills air crews, destroys airplanes and hobbles the efficiency of our air arm.

The greatest lack of information among ground personnel on jet operations is at bases to which no jets are assigned but at which transient servicing for jet aircraft is available, although it is by no means limited to such bases. Obviously, the personnel charged with the responsibility for the servicing, clearing and control of jet airplanes should be thoroughly familiar with the capabilities and limitations of these airplanes.

To increase this familiarization, Continental Air Command has inaugurated a jet aircraft indoctrination course. Here are some of the characteristics of jet aircraft that Air Force personnel should know:

Present jet aircraft have extremely high rates of fuel consumption at low altitudes. For example, the F-80 utilizes over 400 gallons per hour when flying at altitudes below 10,000 feet. On the other hand, at 35,000 feet, fuel consumption may be reduced to 225 gallons per hour for normal operation. For holding purposes at high altitudes this rate of consumption could be further reduced to 125 g.p.h.

Because fuel consumption decreases proportionately with the increase in altitude, cross-country flights are made, if possible, at altitudes above 20,000 feet. These flights are normally planned so that they are terminated with a minimum fuel load plus reserve upon arrival at the destination.

Points to be emphasized for operations personnel:

When clearing a pilot of a jet it is important to insure that he has been briefed on the runway length and obstacles to be cleared on takeoff. The takeoff run will increase with an increase in elevation or temperature. Also, the landing roll is longer than for conventional type planes of comparable size because these airplanes are extremely clean aerodynamically and present little frontal surface to assist in deceleration. Further, the tire area in contact with the runway is relatively small in comparison to the weight of the aircraft. A check should be made to determine the suitability of runways at destination.

Takeoff, climb and landing charts on various jet planes should be available to operations personnel at all times. These charts will show, for example, that if an F-80 weighing 15,350 pounds requires a ground roll of 4025 feet at sea level, temperature 60°F with no wind, the same plane under the same con-

ditions, except that the field elevation is 5,000 feet above sea level, would require a ground run of 6250 feet to become airborne. The charts indicate how increased load, temperature and elevations affect the performance of jet aircraft.

Operations personnel should carefully check flight plans for distance to be traveled, amount of fuel aboard and the altitude at which the flight is to be made. The briefing should be particularly complete in regards to navigational aids including D/F homing devices.

Once the flight plan is filed, the jet pilot should not be forgotten by operations personnel. A close coordination should be maintained with weather personnel so that the jet pilot can be notified of weather changes likely to affect his flight.

The weather information considered most important to the pilot of a jet is the terminal forecast for the destination. Once a pilot has flown a long distance and proceeds to let down for a landing,

there is no alternative but to land in that immediate vicinity. High fuel consumption at low altitudes prohibits an extensive search for the base and further prevents climbing back to altitude to proceed to another base. A ceiling at 20,000 feet, though sufficient for an ordinary VFR clearance, may not be sufficient for a VFR jet flight because fuel consumption at altitudes below 20,000 feet may not allow the jet pilot to reach his destination safely.

For over-the-top flights, weather personnel should be certain that the jet pilot has been briefed on the maximum cloud height. Reports on winds aloft are very important to jet pilots. It should be kept in mind that generally westerly winds up to 100 mph are not uncommon around 35,000 feet.

After takeoff in a jet type plane, the pilot has to be particularly alert to any adverse changes in weather which might affect the safety of the flight. Sometimes adverse conditions arise suddenly and when they do every effort should be made by operations and flight advisory personnel to contact the pilot prior to his letdown and while his airplane is still at altitude. If weather at the destination threatens to close in, checks should be made of the weather at the nearest bases where a landing could be made.

Pointers for tower operators:

Jet aircraft should receive priority in the takeoff position. It should be remembered that for every minute the jet is operated on the ground it might travel seven miles in the air. The pilot should be directed to the takeoff runway by the most expeditious route to reduce fuel consumption.

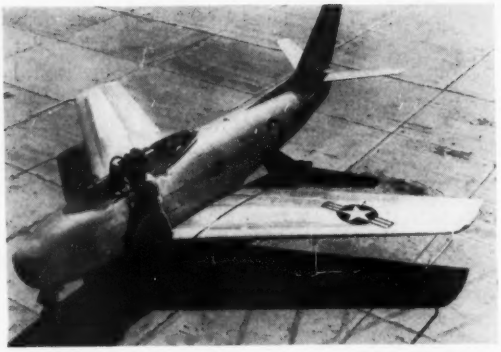
When the pilots of jet planes request landing instructions, be alert to the possibility that an immediate landing may be mandatory. Do not keep jets circling for extended periods of time at low altitudes unless it has been ascertained that sufficient fuel is available.

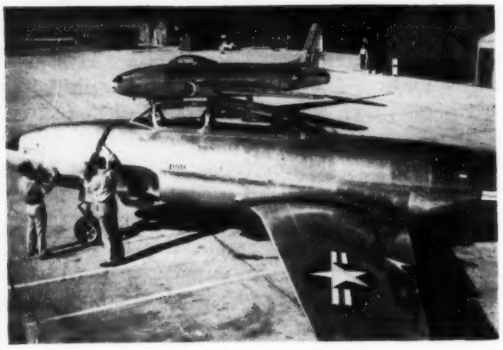
GCA and D/F personnel should have direct communications with weather and operations in order that jet pilots may be alerted immediately to any unsafe conditions which may develop at the base. Any D/F bearing given a jet airplane should be checked and double checked. Frequent bearings will be required because a jet plane may travel eight

miles per minute and quickly fly out of communication range at low altitudes.

Servicing personnel should be informed that:

Fuel cells should be filled only in the prescribed order to insure a complete fuel load. Deviations from correct fueling procedure will result in incomplete service. For example, in the F-86, fuel from wing tanks, if filled first, will drain into the center wing cell. (Flapper valves in tanks prevent two-way flow of fuel.)





Engine oil should be only the grade specified in tech orders. Meticulous care should be taken to use only clean containers and servicing equipment in refilling oil and hydraulic fluid reservoirs. The importance of selecting locations which are free of loose stones and other foreign objects for ground operation of jet airplanes cannot be over-emphasized. Ramps, taxiways and runways should be swept frequently to prevent damage to jet engines by the entrance into air ducts of gravel and other foreign objects.

Technical orders and handbooks pertinent to specific types of jet aircraft are available and should be utilized in training personnel unfamiliar with jet operations. *Lack of such training can lead to accidents.*

On a cross-country flight of F-84's, the leader was informed that the ceiling at destination was 7,000 feet, visibility six miles with light rain. The same weather was reported to the flight as it neared its destination. Just prior to arrival the tower at the destination was contacted and an excited voice came back with "ceiling 800 feet with three-quarters of a mile visibility."

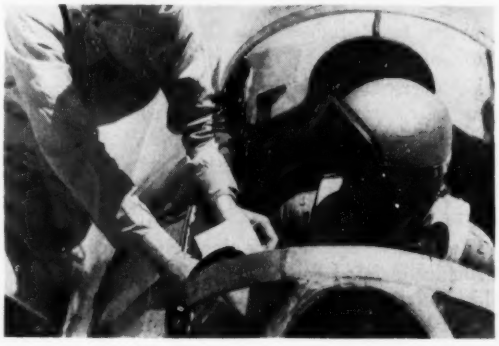
The flight leader headed his airplanes for an alternate. A few moments later one of the pilots became separated from the formation in a cloud. The plane crashed and disintegrated upon impact, killing the pilot.

To draw on just one more case in defense of better jet indoctrination, a story of carelessness in servicing can be told. A B-45 pilot reported that shortly after takeoff excessive vibration was noticed. Number one engine oil pressure dropped to 19 psi, so the engine was cut off and a landing made.

Ground inspection disclosed that the engine accessory case contained one gallon of water and the oil tank one-half gallon of the same. When investigators removed the exhaust cone they found the turbine wheel locked. It had dropped from its normal position indicating turbine bearing failure due to insufficient lubrication.

The probable cause was that the oil drum from which the plane was serviced had been stored outside a hangar in a vertical position during a rain storm.

While jet operations have increased, the shortcomings of personnel which have contributed to jet aircraft accidents also have become more apparent. Yes, it's time to catch up with the jets.

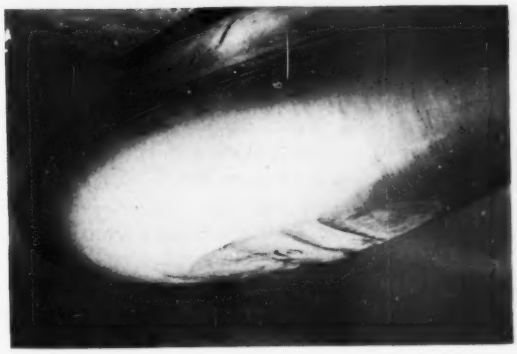


JET WASH

ONE of the new problems jet aircraft have introduced to Air Force pilots is jet wash, and it is proving to be quite a hazard as the wrecked planes shown on these pages testify. Jet wash, or "blow" wash as it is sometimes called, causes the most trouble on formation takeoffs and landings.

Because jet engines do not supply the instantaneous surge of power that propeller driving engines produce when the throttle is shoved forward, recovery from jet wash is more difficult. A jet fighter plane encountering jet wash at low airspeeds is very difficult to control, and the only solution to the problem thus far seems to be to make every effort to avoid jet wash.

The pilot of the plane in picture number one was turning onto the final approach in number two position of a five-ship formation when he encountered jet wash. His plane was rolled almost over on its back as it hit the wash and the pilot very nearly lost control. He managed to level the plane and pull back on the stick, but the plane struck a tree top and was flipped out of control. It plowed through a grove of trees, struck a road, skidded through a fence and came to rest in another patch of trees. Fortunately the fuselage and main section of the wings remained intact and the pilot escaped without injury.



The underside of the fuselage and the tip tanks of the second plane were damaged when the pilot encountered jet wash just after he raised the gear on takeoff. He was the number two man in the second element of a flight of four planes. There was a cross wind at the time and the leader of the second element edged over toward the upwind side of the runway seeking to avoid jet wash. This forced his wingman to accept the downwind side of the runway.

As he broke ground the pilot delayed raising his wheels a moment to make sure he was properly airborne. However, despite this precaution, he was unable to prevent his plane from scraping the ground when he hit jet wash after he had retracted the gear.

The accident investigating board recommended greater separation between formation elements during takeoff and landing and instructed element leaders to take the downwind side of the runway when a cross wind existed.

Pilots report that jet wash encountered on landing frequently seems to "dump" the plane causing it to settle quickly, at the same time rocking it into extreme positions.

The pilot of the F-80 in picture number three encountered this difficulty as he approached the runway in number three landing position of a three-plane formation. He flew into jet wash just as he began his landing flare, and the plane dropped abruptly striking a concrete perimeter road 150 feet short of the end of the runway. The road was under construction, and the left main gear failed to clear the protruding edge of the cement by about ten inches, shearing off the strut at the torque knee. The right wheel failed to clear by about four inches and the impact drove the strut up through the wing.

Since the nose wheel cleared the cement road the plane skidded down the runway on the nose wheel, right wheel and stub of the left strut. The pilot locked the right brake in an attempt to hold the plane straight down the runway. It came to a stop 2000 feet down the runway some 20 feet from the left edge.

In a similar accident the pilot of the fourth plane shown here almost miraculously escaped injury when his plane encountered jet wash and struck an embankment short of the runway and disintegrated.

The pilot turned on final in number two position of a four-plane flight. Because he still had considerable fuel aboard he flew the final approach 20 miles per hour faster than normal. Just as he reduced throttle and started his flareout he struck jet wash. The left wing dipped and the plane dropped so suddenly he was momentarily pushed against his safety belt. He leveled off and pulled back on the stick but the jet wash again tipped his left wing down. It hit the embankment and the plane cartwheeled, strewing wreckage for 200 yards along the runway.

The cockpit remained intact. Because he was wearing a crash helmet and had his safety belt and shoulder harness fastened securely, the pilot was able to climb from the wreckage uninjured.

While jet wash is very similar to prop wash in its effect on airplanes flying into it, the flight characteristics of jet fighter aircraft make it more difficult to cope with.

Since the best solution to the jet wash problem seems to be to stay out of it, proper spacing of jet planes on landing and takeoff will prevent accidents.

JET NAVIGATION

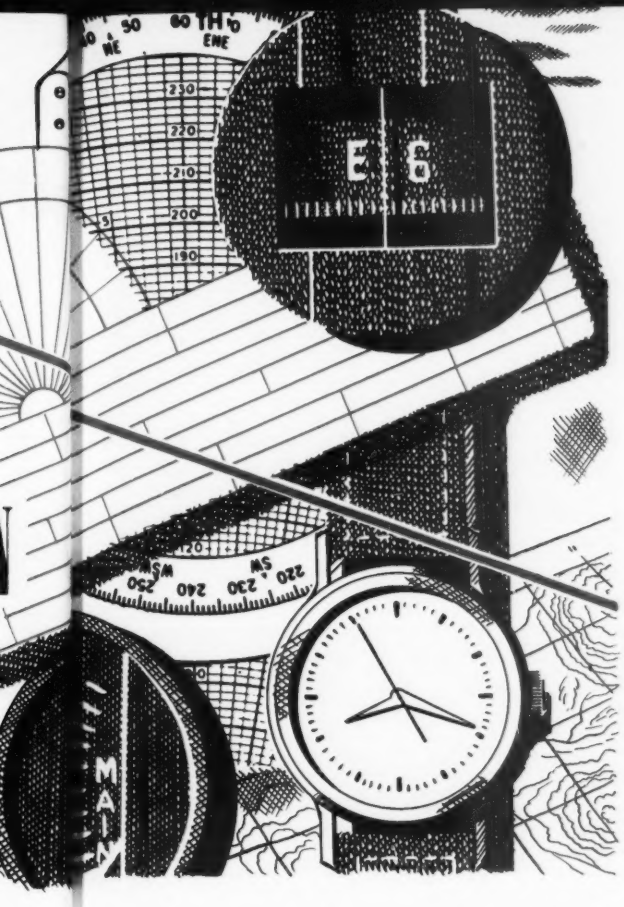
By 2nd Lt. EDWARD N. ALPERN
4th Fighter Group Langley AFB, Va.

THE NUMBER one point in jet navigation is to know your position at all times. No matter how obvious it seems, this statement is the rock-bottom foundation of any type navigation. Keeping your position pin-pointed constantly will do more than anything else to keep you out of trouble.

A successful flight begins before your wheels leave the runway. Pre-flight planning is of prime importance. What does this involve? Selection of route taking into consideration terrain, weather, fuel, and the navigational facilities available. All this information can be obtained easily and accurately before you get in the air.

The first step is adequate briefing either by the operations officer or your flight leader so that you will know exactly what you are to accomplish on your flight.

Secondly, you have to familiarize yourself with the route you have proposed. Up at 30,000 feet you can't pull over to the side of the road and get



out your maps to look them over. It's too late then. Look them over while you're still on the ground. Note any unusual terrain features for pilotage. Study the radio aids to navigation that will be available to you along the way. Some people advise jotting down the transmitting frequencies and call signs of range stations and large commercial radio stations that fall on or close to your line of flight and slipping the paper into the right glove for ready reference. Don't clutter or confuse your mind with too many things but rather make a sensible, clear and concise digestion of all things helpful. For quick reference, slip a paper clip on the page or pages you will use in the Radio Facility Chart (A.N. 08-15-1), the U.S. Radio Data and Flight Information Manual (T.O. 08-15-2), and the Instrument Let Down and Low Approach Manual (T.O. 08-15-3).

If you've checked with operations, checked with weather for conditions along the route and at destination and filed proper clearance—you can go out to your plane. But don't just climb in, "light the wick and leap for the wild blue." It may sound fine in books or look good in the movies but it is not conducive to long life. Pre-flight your airplane. Pre-flight it thoroughly. Most important of all, after your engine has started, check all your communications equipment. Believe me, its better to know your radio compass isn't working while you are still on the ground then to tune it in flight at 600 per expecting it to show you the quick way home. It leaves an empty feeling in the pit of your stomach if the ADF needle points nowhere in particular, especially when that fuel gage starts flickering below the 100 gallon mark.

Let us examine one of the specific problems the jet pilot has to contend with—his great speed. Traveling through the sky at eight to 10 miles a minute does not leave time for the pilot to figure things out slowly. Rapid and accurate calculations are the answer. Most of them have to be mental due to the inconvenience of drawing new course lines on charts, twirling the E6B and writing figures while flying alone.

Here is an example of mental calculating:

An F-86 pilot leaves Langley for a destination 500 miles to the north. After flying 300 miles he finds himself 60 miles west of his desired track. The preferred thing to do is to proceed from this position directly to his destination. How many degrees to the right should he correct to intercept his original course at his destination?

He could turn 60 or 90 degrees to the right and fly until he intercepts his original course and then proceed on; but that would burn an unnecessarily large amount of fuel. By employing a formula used successfully by old pilots, we take the miles off course and multiply them by six and divide that by one-tenth of the distance flown. In this case it's 60 times six giving us 360 divided by 30 giving us 12 degrees, which is the correction necessary to parallel the original course. But that isn't enough, you not only want to parallel your original course, you want to intercept it at your destination. Further apply the formula for the distance left to fly, which in this case in 200 miles. Again we have 60 miles off course times six giving us the same 360 divided by one-tenth the distance giving us 18 degrees. Add the two corrections together and the total, 30 degrees, is the amount of correction necessary to get you to your destination. Even being off course 60 miles, you've flown only an additional 14 miles. Any other track would involve much more ground coverage and consequently an excessive use of fuel.

Competency at any art or technique can be acquired only by coupling constant practice with the best method. In a jet you are covering ground fast and there is no place for guess work.

SWAMP SEARCH

THE C-74 wasn't damaged when the propeller flew off No. 4 engine, and the prop could have been forgotten in the swamps east of Mobile. But members of the 1601st Air Transport Group at Brookley wanted to know why it came off in flight.

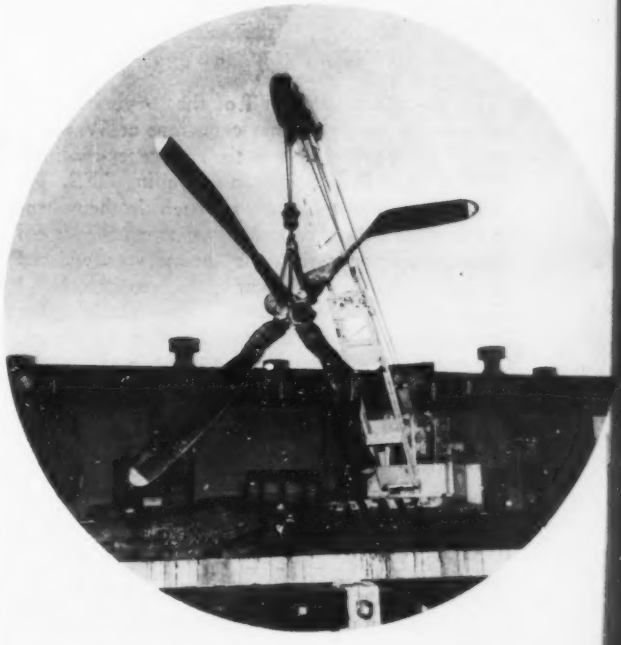
Before the propeller tore loose vibrations were so severe the crew had difficulty reading instruments and the copilot's gyro-horizon spilled. Attempts to feather the rough engine failed. "It was like driving an automobile off a corduroy road onto a paved highway when the prop left the engine," one crew member observed.

A flight attendant aboard the plane watched the renegade prop until it hit the ground and made a mental note of its location. The plane was successfully landed at Brookley, and the attendant later

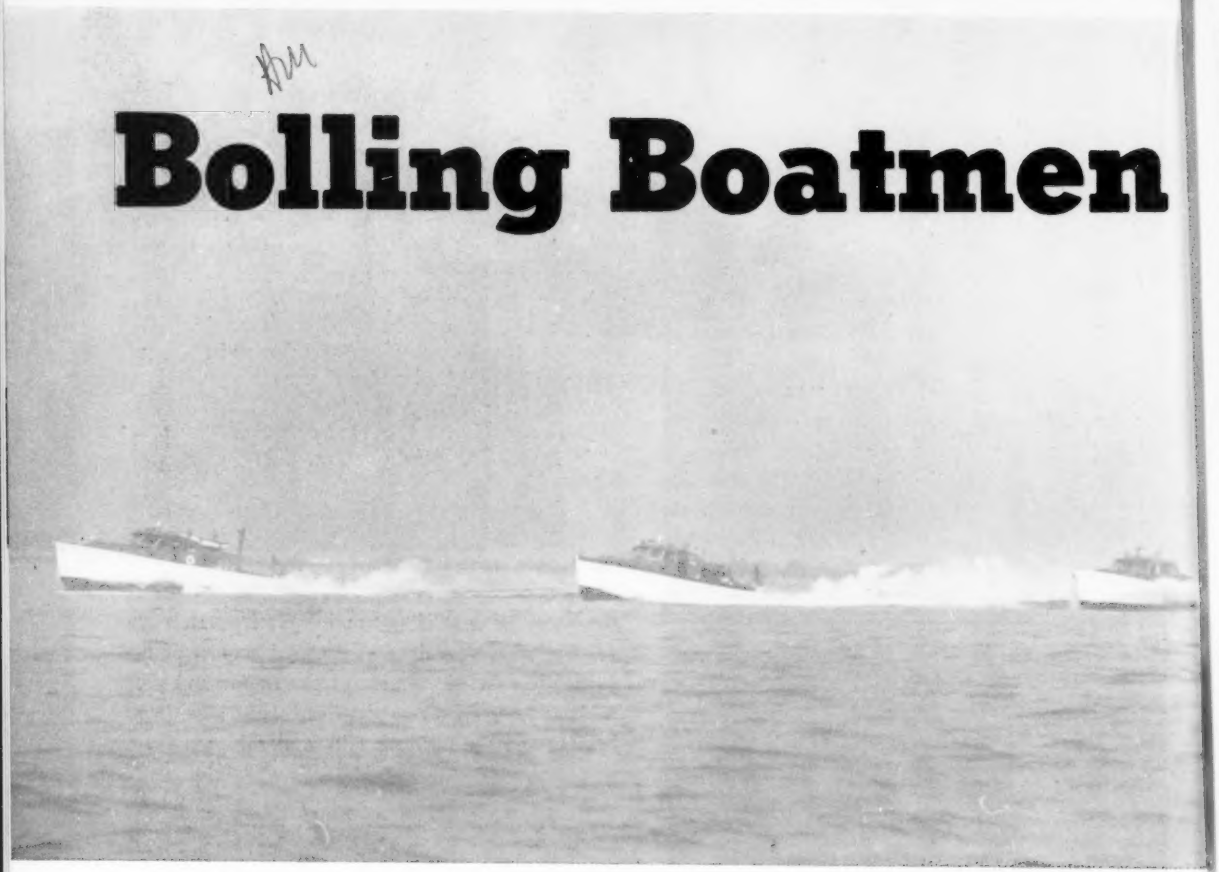
was flown in a T-6 over the area where the failure occurred. By radio contact, a crash rescue party aboard a swamp buggy was guided by the T-6 to within 100 yards of the lost prop. The searching crew then proceeded to hack a trail through the swamp grass to the grave the prop had dug for itself.

A barge was brought into position with a tow-reel equipped truck aboard. Cables were fastened to the prop by men often working in muck to their armpits. It was then hauled aboard the barge and taken to the 1601st propeller shop for study. It was steamed and washed down, then as each unit was removed for inspection photographs were taken so that the exact position of parts could be established.

It was determined that material failure of the "D" row master rod bearing caused partial or complete failure at the "D" crank pin, allowing the prop shaft to rotate in an elliptical arc. This wobbling caused failure of the control brushes, rendering the propeller control system inoperative. After the fire-wall shut-off valves were closed because of fire hazard, continued rotation of the engine and prop without lubrication caused failure of the nose thrust bearing and the ultimate failure of the prop shaft.



Bolling Boatmen



To NO SMALL degree all of the 19 persons who survived the recent airliner catastrope at Washington, D.C. owe their lives to the emergency-readiness of the Rescue Boat Squadron at Bolling AFB.

When the crash boat crews brought in the passengers from the Potomac, ambulances requested from the accident scene by radio met the boats and whisked the injured to the crash ward where oxygen, blood plasma and other necessary aids were available for immediate use. When the rescue had been completed, General Vandenberg made a special trip to the base to thank the men for the fine job they had done.

A representative of FLYING SAFETY Magazine went to Bolling to find out and pass on to other units in the Air Force just how the Bolling boatmen had achieved such a high degree of proficiency, and it didn't take long. While he was being briefed by the unit's C.O. the alarm bell rang, alerting the rescue boat squadron. Before the bell had quit ringing, the skipper of the crash boat standing by was in the squadron office and briefing on the emergency had begun. A B-25 was reported to have had partial power failure on takeoff. Outside, the crash boat engines were turning over with an impatient purr. In a matter of two minutes the boat was pulling out of its slip with its skipper aboard, ready to dash to a crash scene upon further instructions by radio.

The B-25 pilot made it back to Bolling AFB on one engine, probably never realizing that a famous group of airmen knew about his trouble and had been standing by to help him.

Shortly after the all-clear had sounded, a small boat of the squadron returned to its slip. This boat had been out planting a buoy some 15 miles down the Potomac River. A crew of five was assembled and briefed only on the general whereabouts of the planted buoy. It was their job to man one of the 42-foot rescue boats and find the buoy—a typical training mission with the efficiency of the crew being determined by the length of time involved in picking up the buoy and returning to base.

Above. 1st Lt. Walter G. Kelley, commanding officer of the Bolling AFB Boat Rescue section receives crash information.

Prior to departing for a practice rescue in the Potomac River, Bolling boat crew (above) is briefed by unit's C.O.

Engineers, signalmen, seamen and skippers of the Bolling AFB Rescue Boat Squadron are given on-the-job training like this all the time. That is why there was no luck attached to the rescue made by the men and proudly acclaimed throughout the nation. A combination of excellent training, high morale, know-how and discipline kept the fatality list low when the airliner crashed into the Potomac on its landing approach.

Utilizing six boats, this unit is constantly on the alert to cover any water emergency or emergency where the only access to a wreck is by water.

The Commanding Officer is Lt. Walter G. Kelley, a graduate of the Air Rescue School. In fact, all key personnel and most of the other personnel assigned are graduates of the school.

During an actual rescue, T/Sgt. Raymond Chase, the NCO in Charge, contacts the hospital, fire chief, commanding officer, operations, air installations and Chaplain. Two fully manned boats are always held in reserve so that additional equipment made necessary by the condition or location of the wreckage can be picked up and brought out with a minimum loss of time. Another smaller but equally fast boat is always held in readiness for medical personnel. Since it is necessary to get to the wreckage with a minimum of delay because of the danger that crash survivors may drown, the first rescue boat does not wait for medical personnel, but rushes to the scene. This often means the difference between a dunking and a drowning. By the time the survivors have been pulled from the water, medical men can be at the scene to give necessary aid.

T/Sgt. Ray Chase operates a 2-way, 9-channel radio at the Rescue Boat headquarters above, while Pfc. William F. Holtzapfel, below, aboard a 42-foot rescue boat, receives the latest crash-rescue instructions. Messages can be sent to other boats, to aircraft or to the Bolling AFB tower.

Just for the practice, when the water gets fairly rough the crews actually go out and hand litters back and forth from one rocking boat to another, with crewmen acting as patients. Knowing full well that he may be next to ride the litter each crewman is meticulous in his care not to create any hard feelings by dumping a fellow airman into the Potomac. Not all training is conducted aboard the boats. Intense classroom study under the guiding hand of S/Sgt. William Kearney provides the airmen with the correct piloting procedures and operation of their 42-foot boats through the tricky channels among the sandbars in the Potomac River.

Constant contact is maintained by radio between the office of the Commanding Officer and any crash boat out either on a practice or actual rescue.

W/O Donald Slessler, Officer in Charge of Maintenance, has nothing but praise for the three shifts of maintenance personnel who keep the crash boats in tip-top shape. Slessler supervises and checks all 25, 50 and 100-hour inspections. The maintenance crews perform all the maintenance except that which requires the dry-docking of the boats. Further proof that Bolling's boat squadron is strictly an Air Force outfit is the use of the Forms 1 and 1A for logging crew and engine time.

The new airman marine career field, recently introduced by the publication of AF Letter 35-4-94, will be strengthened by the noble traditions already created by airmen who have manned crash boats in heroic rescues. The Bolling unit should inspire other bases to develop and train crash rescue crews, for land or water, to the peak of efficiency. Disasters post no advance warnings. A crash rescue unit has to be as good in practice as it is expected to be in an actual emergency.

JET EJECTION

THE SECOND emergency bailout using the USAF ejection seat has been made successfully with only minor scratches by Capt. Henry J. Pascho, who is stationed at Eglin AFB, Florida. The first emergency ejection was made from an F-86 by 2nd Lt. Robert E. Farley of March AFB.

Here is Captain Pascho's account of the ejection and rescue in his own words:

"I took off as Number Four man in a flight of F-86's. After reaching 38,000 feet I experienced a partial aileron boost failure. At this time, I was approximately 35 miles northeast of Tyndall AFB. I told the flight leader that I was aborting and was returning to Eglin. Immediately after breaking formation, I heard a dull explosion in the rear of the airplane and the engine failed.

"An attempt was made to glide back to Eglin, but since headwinds of 100 knots prevailed, this plan was soon abandoned. I then decided to go to Tyndall.

"When I reached 20,000 feet an air start was attempted, both in normal position and in emergency position with fuel pump on and engine speed at 20 per cent. I kept gliding and circling Tyndall and again attempted a start at 17,000 feet, both in normal and emergency positions and engine speed 15 per cent. Another start was attempted at 10,000 feet with engine speed 15 per cent. All were unsuccessful.

"While circling Tyndall I studied the approach and overshoots at this base and decided that a forced crash-landing would be impractical since overshooting the north-south runway would have resulted in my going into the bay and undershooting would have put me in the Gulf. Attempts to land from any other direction would have been impractical due to the large buildings adjoining the airfield. I decided to bail out.

"I flew in a southerly direction to clear land areas and passed over Tyndall at an altitude of 10,000 feet. When the plane was approximately two to three miles off shore another start was attempted but without success.

"I trimmed the F-86 to fly straight and level and left it at 7000 feet at an airspeed of 200 knots. Upon firing the ejection seat I heard a large explosion but no sensation of being ejected was felt. I could feel myself tumbling rapidly through the air and knew I was clear of the airplane. Safety harness was unlocked and I was easily separated from the seat.

"I pulled the rip coard approximately three seconds after leaving the seat and while still tumbling. The parachute opened with a terrific jolt and hit me on the back of the head. While floating down I observed the F-86 crash into the water approximately three miles south of where I had left it.

"Entry into the water was made in a backward position. I quickly released my parachute and inflated my Mae West. At this time a C-45 and a B-25 started circling over me. The water was very rough with white caps and swells running 10 to 12 feet high which made it very hard for the pilots to keep an eye on me. The parachute sank and the two planes started circling the wreckage. A Coast Guard PBY was observed at this time and it also was circling the wreckage. Thinking they were not going to return to me, I brought out my sea-marker dye and released it.

"The PBY spotted this immediately and came over the vicinity in which I was floating. It dropped a five-man life raft which inflated upon striking the water some 100 yards west of me. I swam to within 10 feet of the raft but could not reach it due to the wind blowing it away from me and the Mae West hampering my swimming. After chasing it for approximately 200 yards I gave up exhausted.

"The PBY dropped another raft which also landed 100 yards to the west of me. However, it did not inflate and I swam to it and tried unsuccessfully to inflate it. Since it was bouyant I climbed aboard and floated.

"The PBY and B-25 kept buzzing the crash boat and heading straight for me and this course was soon picked up by the boat. Some difficulty was encountered in trying to get aboard the boat as the swells were so large I feared being dashed against the side of the boat. The boat crew finally threw me a life preserver and a rope ladder and pulled me aboard. I was in the water only 39 minutes."

DITCHING THE F-86

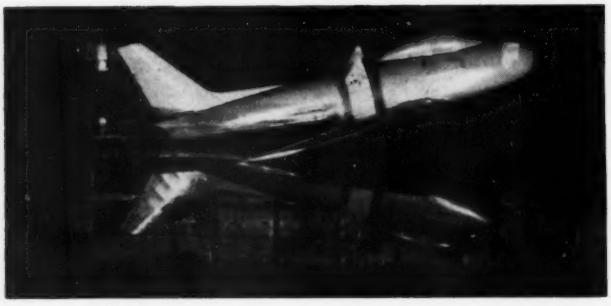
To study its behavior when ditched, a one-tenth scale model of a North American F-86 was landed in calm water of the NACA tank at Langley. Various landing attitudes, speeds and conditions of damage were simulated.

This airplane was of interest as a typical swept-wing jet-powered fighter incorporating a nose-intake duct. The investigation was requested of NACA by the Air Materiel Command. Design information was furnished by North American Aviation, Inc.

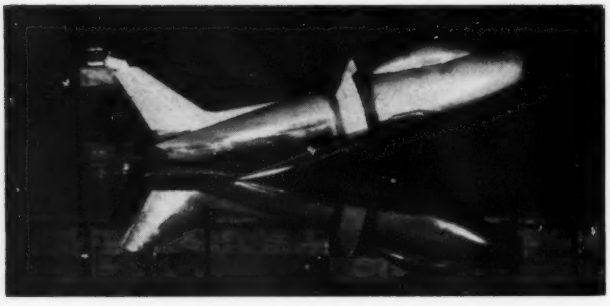
The model was constructed of balsa wood and spruce and was ballasted internally. Its wing span was 3.72 feet, its overall length 3.75 feet. The flaps were hinged and held in down posi-

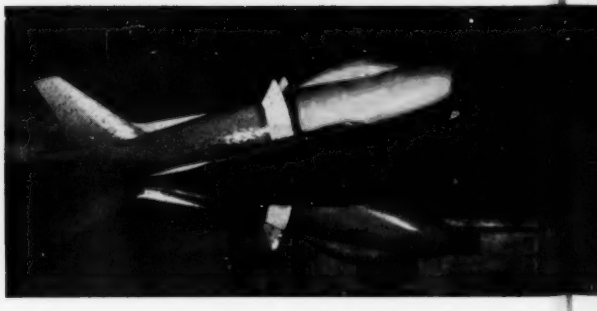
Landing attitude, 4 degrees; landing speed, 132 knots. **90 feet**

Landing attitude, 9 degrees; landing speed 109 knots. **180 feet**



Landing attitude, 14 degrees; landing speed 98 knots. **170 feet**





tion by a strand of thread of the required strength to simulate failing load conditions.

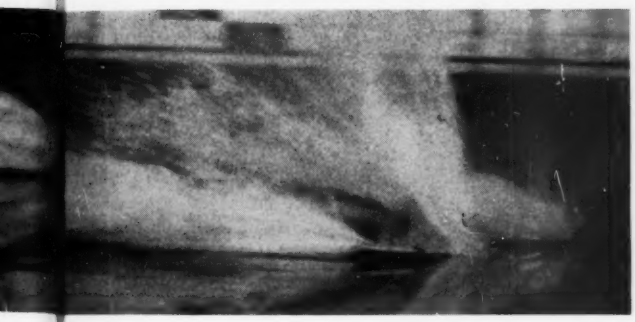
Hydrodynamic effect of probable bottom damage was investigated by constructing a crumpled bottom of balsa wood dented to conform with damage estimates based on the strength of that part of the fuselage.

The model was launched by catapaulting it from the NACA tank monorail. Control surfaces were set so that the plane did not yaw or change attitude appreciably in flight. It was concluded that the airplane should be ditched at the nose-high, 14-degree attitude to avoid the violent dive which occurs at the four-degree attitude. Flaps and leading edge slots should be fully extended for lowest possible landing speed. Wing tanks should be jettisoned to avoid undesirable behavior. In a calm-water ditching under these conditions the airplane will run smoothly for about 600 feet, with deceleration of about 3 G.

Just as this issue went to press, 2nd Lt. James E. Towle of Otis AFB was forced to ditch his F-86 jet fighter in the bay near Langley AFB because of loss of power. He said the plane's deceleration upon touching down was a definite lurch, about like applying brakes in an automobile, but then the plane skipped or slid along the top of the water and came to an easy stop.

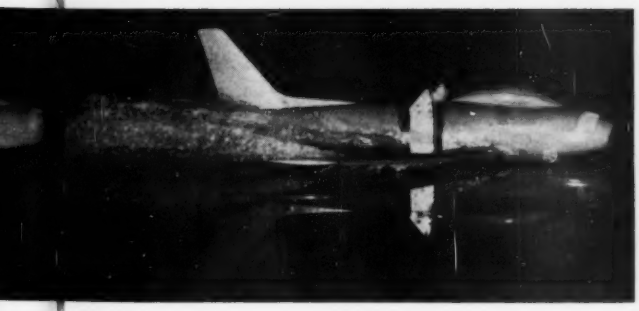
He used full flaps, but no dive brakes, and set it down in a normal landing attitude, as recommended by the NACA tests. He was picked up immediately, without any injuries, by the Langley crash rescue boat.

170 feet



190 feet

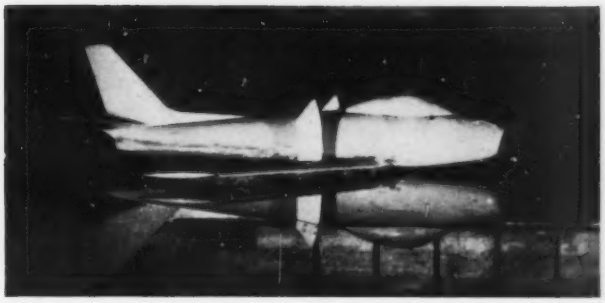
350 feet



560 feet

400 feet

520 feet



3-RING CIRCUS

By M Sgt. LOUIS R. KRAMER, Jr.
Connally AFB, Texas

HOW WOULD you solve your traffic pattern problem if your base was suddenly assigned two additional missions which meant that in addition to your normal traffic you would have dozens of light planes and an assortment of helicopters flitting about the traffic pattern? One base has had to solve just such a problem.

Basic Pilot Training Station, Connally Air Force Base, Waco, Texas, has recently assumed just two such additional missions — that of training helicopter pilots from all branches of the Armed Services and training liaison pilots for the U. S. Army.

Establishing a traffic pattern to handle this unusual variety of aircraft was indeed quite a problem since the field has dual runways with no sod landing strips for students. With this fundamental problem to contend with it was necessary to provide:

1. A landing strip for T-6 students shooting landings at the home base known as closed traffic.
2. A traffic pattern eliminating interference between transient and incoming traffic from auxiliary fields and closed traffic.
3. A pattern simple enough and yet with definite landmarks for student training.
4. A pattern in which T-6's, Liaison planes and helicopters could all operate without interfering with each other.

Only after painstaking effort on the part of the instructor personnel at CAFB was this pattern devised and put into effect. Utilizing two concentric rectangular patterns with the entry to the open pattern being on a course toward a runway, as near 45 degrees to the downwind leg as possible (employment of two patterns necessitates a 90 degree entry), maximum efficiency was achieved. Traffic altitude was set at 1500 feet for the T-6 program and 1000 feet for helicopters.

It was then possible to superimpose Sikorsky H-5 and the smaller Bell H-13 traffic patterns on the T-6 network with little appreciable notice because of:

1. The flexibility of helicopter operations, i.e. angle of approach to entry and takeoff area is very steep and the high maneuverability of this unusual type aircraft.
2. The low-altitude requirements of helicopters for execution of their traffic problems.

In actual operations helicopters enter base and crosswind legs at least a mile from their respective ends of the runways at a maximum of 500 feet actual. Helicopter training renders invaluable aid to the Cadet T-6 program in that copter pilots detect drift immediately and advise traffic and runway control personnel. This is a definite aid where inexperienced cadets are flying.

One difficulty that sometimes arises occurs if a student T-6 inadvertently moves from his run-up area boundaries and gives a hovering helicopter the prop-wash treatment.

Nevertheless the T-6 and helicopters operate safely together in the same traffic pattern.

On the opposite side of the base from the flying field Connally has a large grassy area. In this area which is situated right behind the Officers Mess, the liaison planes operate. Thus three widely diversified flying operations are conducted safely without interfering with each other.

WELL DONE

To: 1st Lt. PAUL J. LAWLESS, Engineering Officer
71st Fighter Squadron, March AFB

LIEUTENANT LAWLESS was assigned to fly an F-86A which had been grounded for engine change, 100-hour inspection, and magnafluxing of the horizontal stabilizer hinge.

Immediately after takeoff, Lieutenant Lawless noted a strong nose-high trim condition which he attempted to correct with the elevator trim tab. After trimming to a 10-degree nose-down indication, he found that the trim tab had no effect and that extreme forward pressure on the control stick was required to prevent a stall. Lieutenant Lawless was unable to hold the aircraft in a straight climb due to the pressure. Therefore, he established a climbing turn which reduced the angle of climb and permitted him to relax a small amount of the control pressure necessary to avoid a stall. He reported the difficulty to operations by radio and was advised to determine flight characteristics at a safe altitude, if possible, or to circle over an uninhabited area and leave the aircraft in case sufficient control could not be maintained to insure a safe landing. The Squadron Commander, Lt. Col. Jack W. Hayes, Jr., took off immediately to inspect Lieutenant Lawless' aircraft in flight for any visible malfunction or damage.

Upon reaching an altitude of 19,000 feet, Lieutenant Lawless was able to maintain altitude by turning at reduced power while holding heavy forward stick pressure. Lt. Col. Hayes was unable to note any visible damage to the aircraft. Lieutenant Lawless lowered approximately half flaps to test flying characteristics. Since this action permitted slightly better control of the aircraft, Lieutenant Lawless then proceeded to lower full flaps and landing gear. A reversal of control pressure was noted with the landing gear down and approximately 25 pounds of back stick pressure was required to maintain level flight. With this condition, Lieutenant Lawless elected to land the aircraft. A successful landing was accomplished.

Inspection revealed that the lower attaching point of the horizontal stabilizer actuator had sheared, thus permitting full travel of the horizontal stabilizer depending on load condition, with no trim control available to the pilot.

Lieutenant Lawless displayed superior flying skill and judgment throughout this flight. He demonstrated his ability to face an emergency situation in a calm manner and to utilize alert thinking and sound technique in saving himself and a valuable aircraft without injury or further damage.

the Bouncing Kangaroo

By 1st Lt. George C. Bayles
Clark AFB

Undoubtedly, anyone who has been to the Far East recently has heard of the "Lifeline of the South Pacific." This nickname adopted by the 6200th Troop Carrier Squadron fits well with its insignia, a bouncing kangaroo with a green instrument card tucked behind its ear. Assignment to the 6200th meant seeing a huge portion of the "down under" side of the world, and having been assigned meant that you had gone places and done things that would fill a good-sized travel log.

The 6200th Troop Carrier Squadron was activated in September of 1948 with a few strong hearted C-46's, a handful of seasoned pilots, and one of the most unusual and difficult schedules ever to be maintained by a peacetime Air Force organization. The "lifeline" was a 5,000-mile route extending from the Solomons through New Guinea to the Netherlands East Indies, over to Borneo, through the Celebes and on to the Philippines with its thousands of islands. The route was 95 per cent over-water flying through some of the world's worst weather. When the outfit completed its operations a few months ago it left a perfect safety record.

Routine stops included such world-renowned spots as Balikpapan, Bandjemasin, Bouganville, Biak, Billiton, Batavia or Guadal, Kuching, Labuan, Morotia, Hollandia, Wewak, Rabaul, and Zamboanga.

Most of the airfields along this route are dirt, coral or gravel strips that were constructed during the war years, and a few are strips of steel matting. The rapid growth of kuni grass didn't help matters either. The shortest strip the 6200th operated from with full loads was in Borneo. It was only 2800 feet long, and when it rained it was usually under water from two to four inches in depth. Trees 60 feet tall were within 200 feet of either end of the runway.

The first thing the 6200th showed a newly-assigned pilot in the Southwest Pacific was the tropical weather. He got a good look. It was routine to log 15 hours on actual instruments during a 30-hour trip. Weather is always plentiful along the route flown by the 6200th TC's. Because of the lack of radio aids, navigation had to be done to perfection. To avoid letting down over islands with mountain ranges, over water letdowns on the navigators' estimates were SOP.

To fly through tropical storms with a loaded C-46 requires top pilot skill. These pilots reduced airspeed and flew the altitude system through the tropical fronts. All first pilots possessed green instrument cards and most had logged over 3,500 hours of flying time. Radio facilities were the exception rather than the rule with very few of the stations equipped to give weather reports. Alternate airfields just weren't there and the flight, once well under way, had to get through to destination.

Flying under these conditions was only half the job. Mechanical equipment for handling freight was lacking at the remote stops. Using oil drums, oxygen bottles and logs as rollers, the available man-power, both native and crew, accomplished unbelievable feats of loading and unloading heavy shipments.

The personnel on all flights got used to "C" rations and warm water. The sultry tropical heat was an enemy of air crew efficiency. Atabrine was a must, as it was for fighting men in these same islands during the war. Mosquito and bug bites, mashed fingers, and dirty clothes were taken for granted as part of the life of freighting. During these long hauls through the islands of the Pacific, the crews sweated out the probability of being forced, in the event of a crash, to face the hospitality of untamed savages who still "headhunt."

In spite of it all, the 6200th set marks that should be added to Air Force history. In 25 days with seven C-46's, this unit carried over 300,000 pounds of equipment and 126 passengers, averaging over 90 hours for each airplane. The best record of all is that the "Lifeline of the South Pacific" has never had a major or minor accident in flight operations that have exceeded 10,000 hours.

RECIPE FOR DISASTER

TAKE A 36-PLANE formation of aircraft, combine a generous portion of disregard for briefing and stir in a rat race seasoned well with violations of flying regulations and you have a prime recipe for a major air disaster. That recipe was cooked up at a training base recently and the final result was two wrecked planes and four dead men.

The large formation of T-6's made its scheduled mission in good order, and in accordance with the briefing, half of the 36 planes left the formation and returned to the base. Each plane was piloted by an instructor and carried a student in the rear seat. Instructors of one of the two flights of nine planes remaining in the formation had been briefed to break formation and give instrument training to their students after the formation mission was complete.

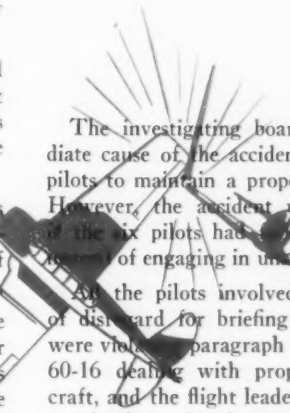
It was during the break-up of this second box of 18 planes that the trouble began. The formation leader, after observing that his formation had apparently broken up as briefed, put his student under the hood and proceeded with his instrument work. However, seven of the other instructor pilots subsequently rejoined in a loose trail formation and began a rat race at an altitude of approximately 2000 feet.

The unauthorized trail formation proceeded through a series of lazy 8's and turns. As the rat race continued it became more violent and the pilots began attempting to cut one another out in the turns.

The pilot in number two position found he was having difficulty staying in the formation and became apprehensive about the proximity of some of the other planes. He wisely pulled out of the race.

The rat race continued for approximately five minutes until the plane which had been in number five position appeared to drop back. Both planes were in a turn to the left with number six plane rapidly closing the gap. One of the other pilots in the flight saw that a collision was imminent and picked up his microphone to sound a warning, but he was too late. The number six plane collided with number five, and the left wing of both planes was sheared off. The pilot who had seen the collision happen immediately called "bail out!" on the radio, but the occupants of both planes failed to jump before the planes crashed. All four were killed instantly.

Apparently the men in the plane which had been overtaken tried to get out but had insufficient time. The occupants of the other plane had not unsnapped their safety belts.



The investigating board found that the immediate cause of the accident was the failure of both pilots to maintain a proper watch for other planes. However, the accident would not have occurred if the six pilots had [illegible] the mission briefing [illegible] of engaging in unauthorized formation flight.

All the pilots involved in this glaring example of disregard for briefing and proper air discipline were violating paragraph 4 of Air Force Regulation 60-16 dealing with proper air separation of aircraft, and the flight leader was in violation of paragraph 47 in that he was leading an unauthorized formation flight. Disciplinary action was taken against these men by their commanding officer. Pilots sooner or later come to grief when they wilfully violate the spirit and the letter of regulations carefully devised to prevent them from subjecting themselves to conditions capable of developing into accidents.

It is impossible, and should certainly not be necessary, for a supervisor to follow his men around like a hen with her newly hatched brood. Pilots worthy of their military wings should have achieved sufficient maturity of judgment to discipline themselves and to follow regulations.

WHAT'S STRANGE

ABOUT A STRANGE FIELD?

ACTUALLY, there are no such things as strange-field landings—not in the United States, that is. Odd though that statement may sound, it can easily be substantiated.

Now for example, when a pilot plans to fly a route for the first time, he checks his maps and facility chart to find heading, time and distance to destination. Finding the airfield then becomes a simple matter certainly not considered "strange route" navigation. Why then should landings at fields unfamiliar to pilots be a particular hazard? For the answer, lets look at some so-called "strange-field" landing accidents which have occurred recently.

An F-47 pilot cleared for a western base. He took off during the late afternoon, making a night landing necessary. During the final approach, the F-47 deposited its main wheels on the side of a 12-foot dike two hundred feet from the end of the runway. For the benefit of those who would gallantly come to the defense of this jug pilot screaming, "What was the dike doing there?" we quote from the Directory of Airfields, in the Radio Facility charts:

"DIKE, WNW."

When queried by the accident board, the F-47 pilot said that he had never been to the field before and consequently didn't know about the dike until he landed wheels gone when he knew positively he had put them down. Strange-field landing or strange flight planning?

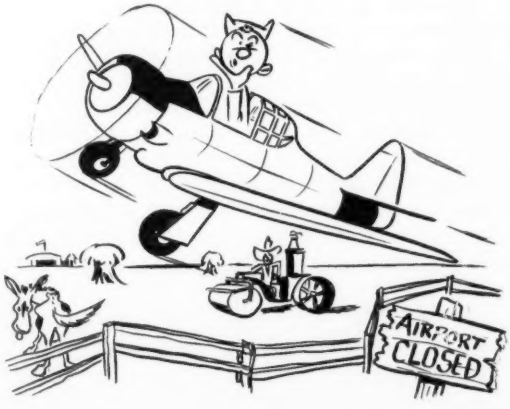
A B-25 pilot cleared for an eastern airfield after assuring himself only of the fact that it was a "P" field. When he came over his destination everything looked rosy. Nice long concrete runway with all the trimmings.

The B-25 touched down in the first hundred feet but a little hot. Airspeed was 105 mph. After lowering the nose wheel, the pilot took one look and hit the brakes almost as fast as the B-25 hit a fence, a ditch, a road, and another ditch. Are you wondering what happened to that long runway? A check of the same Directory of Airfields shows that runway to be 2100 feet long. The runway just appeared nice and long because it was only 50 feet wide. He was used to flying from a field with runways 150 feet wide. Strange-field landing? Given the chance he would probably land on the roof of a hangar provided it was adequately marked with numbers on top at either end.

Another B-25 pilot landed 300 yards short of a slope leading up to the runway. After a goodly bounce which afforded another look at the runway, the B-25 started shedding parts by the numbers and after coming to a stop was finally destroyed by fire. PHACUS* tells all who are willing to take the trouble to read about that same slope leading up to that same runway. Strange-field landing?

The number of pilots who have flown through unseen wires on final is too great to elaborate on here. One typical accident, however, involved an F-80 pilot who in an effort to land on the first part of a rather short runway, backed way off for a long low final. Too late to do anything about it, he waded through some telephone company property which is still elaborately catalogued in the Radio Facility Chart.

At the beginning of this article we asked why a landing at a field unfamiliar to a pilot presents a particular hazard. We think these four pilots have illustrated the answer by being completely unfamiliar with the notices about the fields where they planned to land. If its in the book, it's not a strange field.



*Phacus—Pilot's Handbook, Aeronautical Charts, Continental U. S.

WHEN THE SNOW HITS THE FAN

DURING THREE YEARS of flying B-29's in the Arctic regions, pilots of the 375th Reconnaissance Squadron (VLR) Weather, have learned lessons about cold weather flight. The pointers are applicable wherever below-zero temperatures are encountered.

Thorough preflight briefing is extremely important. Briefing should include all information on the planned mission so that no question will exist in any crew member's mind as to exactly what he is expected to do under normal conditions and for any emergency that might arise.

With below-zero temperatures it is desirable to place the aircraft inside a heated hangar at least three hours prior to takeoff time. This will dissipate frost and snow, as well as warm the oil and accessory sections of the engines. In temperatures below minus 10°F, falling snow will not stick to the airplane's surfaces when it is taken out of the hangar; however, with temperatures between 32° and minus 10°F there is a good possibility of falling snow forming ice on the aircraft. If loading is to be done outside a hangar, it should be thoroughly planned to insure the least possible ground time in sub-zero temperatures. Heaters should never be removed until immediately prior to starting engines, and care should be taken that all flight instruments are warm.

Runways should be carefully inspected after a snowfall because snow of more than a six-inch depth may dangerously increase the length of takeoff roll. Snow or ice hurled back by propellers or the rolling tires may damage flaps and radomes.

Contrary to popular belief, propeller and wing icing has been encountered at temperatures as low as minus 30°F, dependent, of course, on a high relative humidity. The quantity of ice accrued at such low temperatures is usually small and has little effect on the main airfoils, but the effect on unheated propellers is of a serious nature. Ice picked up on such props at very low temperatures is extremely hard to unload and must literally "wear off." This can hamper cruise control attempts and instances have been reported when the cruising speed fell off 40 miles per hour because of propeller ice. On occasions pilots have increased RPM's to get rid of prop ice. Sometimes this method has resulted in unbalancing the propeller to such an extent that it had to be feathered because of extreme vibration. The only "sure cure" is to avoid all potential icing zones whenever possible and to "get cleared" and then climb as rapidly as possible out of icing zones where severe propeller icing is encountered.

Taxiing in snow and poor visibility calls for caution and alertness at all times. Taxiing slowly, using the least amount of power possible, is of paramount importance. Power is the best method of maintaining directional control, rather than brakes.

Brakes, if used during landing roll, should be applied gently and cautiously. On airplanes equipped with reverse-pitch propellers, reversing of propellers is the safest and most efficient means of rapid deceleration on slippery runways. It must be remembered, however, that in loose snow reversing the propellers will result in temporarily limiting the forward visibility to zero.

A difficulty encountered when making a letdown is icing of the pilot's compartment windows. This can be prevented by turning defrosters on before descending and by maximum use of the heating system. Preventing cylinder head temperatures from becoming too low is another problem in letting down. To overcome this, descents should be made at no higher than cruising speed. Applying cruising power for short periods when the head temperatures decrease will usually remedy the situation.

Depth perception in snow-blanketed areas can be deceiving, and although the runway might be clearly visible from above, it may disappear on the final approach and roundout because of lack of contrast between the strip and surrounding ground. It is advisable, therefore, to request the tower to turn the runway and approach lights to full intensity whenever ice fog or snow flurries are present. Besides aiding in orienting for the traffic pattern they help materially in judging height above the runway. GCA assistance should be requested in conditions of low visibility as well as low ceilings.

Adequate training and meticulous preflight planning will make a winter flight a routine mission.

TEN TI

THERE HAVE been no accidents resulting from peeling up and gaining altitude on the break for landing since the publication of AF Reg. 55-13. But never let it be said that some pilots couldn't figure out a way to beat the regulation. Instead of doing the old off-center loop from which too few recovered, the fad today is the nine G turn at maximum speed.

At last 10 accidents in the brief span of one year following publication of the regulation have been caused by inadvertent stalling just before completing the turn onto final. These 10 accidents, pictured here, resulted in three funerals, a rather extensive hospital recuperation for one pilot and assorted injuries for three others. Nine airplanes were rolled up in a ball and the other received major damage.

The average flying time of the pilots in the type augered in was 320 hours, yet none had less than 100 hours in the models involved. The average total first pilot time was 1272 hours and only one of the pilots had less than 500 hours total. From that score, we can see it is not the J.B. (Junior Birdman) of the class 49X who is spinning in on final, but rather the older pilots who haven't learned yet that few people if any, outside the cockpit, are still impressed by the approach, peel off and landing of an airplane.

What these 10 pilots failed to realize was that if a very tight turn is made from the initial, the radius of the turn will be relatively small, and another tight turn will be required to line the plane up with the runway. By the time this second tight turn is begun the airspeed will be down in the "auger zone." When this happens, the chances are fairly good that the pilot's next turn will be made with his eyes toward St. Peter with a "How's the flying situation up here?"

The obituaries of the three pilots who didn't recover their senses in time follow:

While executing a tight overhead approach, pilot No. 1 overshot the final turn. In an attempt to line up with the runway he increased his bank. The bank continued past the vertical and the F-47 rolled on its back, nosed down and crashed in an 80-degree inverted dive with very fatal results.

No. 2, an F-51 pilot, in an attempt to keep his overhead approach as small as possible applied ex-

TURNS

cessive back pressure to the stick as he rolled onto the final, causing a high-speed stall at approximately 500 feet. A partial recovery was made, but the F-51 crashed 700 feet short of the runway.

No. 3, an F-47 pilot, was observed to make a tight overhead approach. Turning final, he was in a 40-degree bank and approximately 50 feet above the ground when the bank increased to 80 degrees.

An F-51 pilot who lived to tell his story said that he made a sharp peeloff for a 360-degree overhead approach. After approximately 270 degrees of turn, with the gear and flaps down, he realized that he was overshooting the turn. The pilot increased his bank at which time the F-51 entered a high-speed stall. Good bye, gear.

The pilot who is undergoing extensive recuperation made a tight overhead approach with a sharp turn onto final at 300 feet altitude. However, too much altitude was lost and the F-47 crashed 700 feet short of the runway. Somewhat the same thing happened to still another F-47.

After executing a tight overhead approach, an F-51 pilot escaped with only minor injuries. The landing was sufficiently hard to blow out the tires. After the struts went up through the wings, the tires rubbed against the bottom of the panels.

Another F-51 pilot executing a tight overhead approach lost considerable altitude in the turn onto final. The pilot rolled his aircraft out as he passed the end of the runway. The ground came up too fast, however. Result, a very hard landing.

Put this same type pilot in a jet and you'll get the same results. An F-84 pilot made a hard landing 250 feet short of the runway after executing an extremely tight overhead approach. All three gears sheared on impact.

"Look Maw, two fans." An F-82 pilot executed a tight overhead pattern and stalled out in the final turn. He managed to level off just as his airplane struck the ground approximately 300 feet short of the runway.

At this point the reader should be convinced that racking a fighter around a tight pattern is a thing of the past. These ten pilots have done the research. Be sure that you benefit by what they learned the hard way.

MEDICAL SAFETY

IN THREE EASY LESSONS

THE FOLLOWING list of questions can be readily answered by those interested in a handy rule-of-thumb self analysis. It is extremely important that a completely honest answer be given to each and every question and that no thought whatever be given to the method of scoring yourself at the end of the article. Unto thyself be true.

The following is a list of questions to help you determine if you are superior to others. Check yourself on those you possess.

	True	False
I wish that I were like someone else.	.....	.....
I love to look at myself in the mirror.	.....	.....
I enjoy being funny as long as I can get a laugh.	.....	.....
I get annoyed if my plans are interfered with.	.....	.....
I get a kick out of a joke on someone else.	.....	.....
I pout when the joke is on me.	.....	.....
If I don't get credit for good work I quit.	.....	.....
I like flattery even if I know it is flattery.	.....	.....
I hate to admit a fault or a mistake.	.....	.....
I like to do things to annoy my enemies.	.....	.....
When I get mad I really get mad.	.....	.....
I enjoy punishing the other fellow.	.....	.....
I enjoy a good fight.	.....	.....
I enjoy reading no matter what.	.....	.....
I enjoy being punished.	.....	.....

There is so much *so-called* medical information written in magazines these days that anyone should easily become expert in medicine, psychiatry or what-have-you by just subscribing to a sufficient number. If reputable doctors had their way about it these magazines would be more careful in their attempt to spread medical knowledge. Some publications will print anything that the editors think the readers will read—the readers in turn will read anything in print (particularly if it looks snappy). Also, if it is in print it must be true???

Then there is that old human custom of getting something for nothing. Perhaps this is responsible for so much self diagnosis in the particular field of the mind.

There are times when an individual needs special counsel or advice in problems which have become a tangle. The person caught in this predicament can not himself determine what is holding him and he fights back, which results in struggles and sometimes an escape. Often, however, he remains caught.

The outside world—friends, neighbors, relatives—only perceive that we are struggling and generally misunderstand. It is hard for a free fish to understand what is happening to a hooked one.

Sooner or later most of us get caught. How much of a fight we have on our hands depends upon the hook and on us. Sometimes we are successful in slipping off the hook or breaking it. Then again we may need help. And if it is help we need, for goodness sake let's think enough about our physical or mental well being at least to go to the proper source for help.

Watching smooth-running cars purring along the highways or studying these cars minutely as they pose in the salesroom might supply a considerable body of knowledge about automobiles. But it would never give the understanding of why automobiles work and why they don't work, such as the study made by a humble mechanic in the greasy back rooms of a garage repair shop. And this is precisely why psychiatrists who have studied the "wrecks" that come to them are enabled to say something definite, positive and useful about the queer behavior of queer people. And then about the queer behavior of normal people.

On scoring the above questionnaire:

There is no rule of thumb by which you can analyze yourself. Preventing mental ill health is among the Flight Surgeon's skills and it is to him that you are directed to go with your problems rather than to indulge in the dangerous self analysis technique.

PIX TELL ABOUT PILOT'S FIX

One of the greatest aids Flying Safety personnel have in establishing accident causes is photographs.

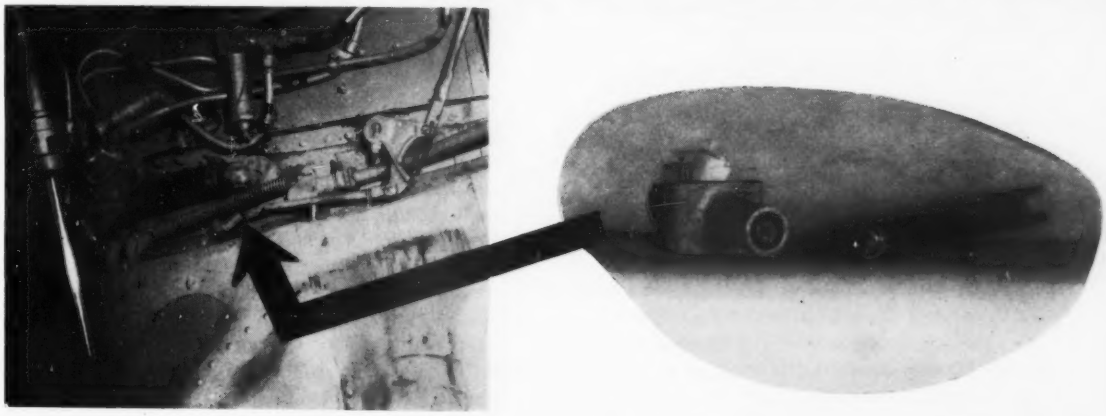
Only rarely do accident reports include photographs taken while the accident was actually happening. Such a photograph is the one of the F-51 shown landing with the right wheel retracted.

After entering the traffic pattern for landing, the pilot placed the gear handle in the DOWN position but the safe light failed to come on. Repeated efforts to lower the gear properly were unsuccessful and the pilot dragged the runway for a visual check by the tower. The tower reported his right fairing door closed and gear not extended.

After all emergency procedures had been attempted without success, the pilot elected to make a one-wheel landing rather than bail out. A photographer snapped the picture as the plane touched down. The pilot demonstrated excellent technique and held the right wing up for approximately 2000 feet of the landing roll. When the wing finally settled the plane skidded around to the right and came to rest 250 feet off the runway. The pilot was uninjured.

Cause of the accident was found to be a failure in the rod assembly, landing gear door lock hinge, which prevented the right fairing door from being unlocked.

Accident photographers should make every effort to obtain the best possible photographs of any accident they are called upon to photograph. Good pictures, showing the defective parts as well as the entire plane are of inestimable value in cases of materiel failure since it is sometimes difficult after an accident to determine which parts failed before the accident and which parts were broken during the crash.



KEEPING

Lucky You—No Fur—The USAF Medical Laboratory has been studying the effect on airmen of sound waves from jet propulsion and other modern aircraft engines. Rats and guinea pigs can be killed with high frequency sound waves but man is safe against them because he has no fur. With the fur-bearing animals the sound energy is turned into heat, and the animals die because they get so hot that the body proteins coagulate. When the fur is shaved off these animals there is no such coagulating effect. Man with his much more efficient skin-ventilating system is safe at energy levels 120 times greater than rats are.

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Fix by Weather—Local weather conditions at sea are generally known to Coast Guard search and rescue agencies. If lost at sea and about to ditch, pilots should radio local weather conditions. This serves as a rough fix and will aid immeasurably in localizing the search area. It could save days of riding a rough sea in a crowded dinghy.

Licensed Pilots—According to the latest figures from CAA, there are 491,306 pilots recorded with the Civil Aeronautics Administration. This total represents an increase of 58,000 over the figure of a year ago. California leads all other States with 58,499 certificated pilots while Texas is second with 32,593.

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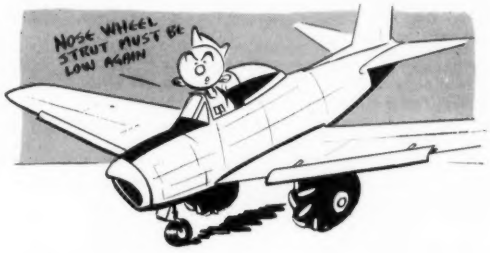
Transport Goliath—A proposed transport version of the B-36 is under study by the Air Force. Although an experimental model of the C-99 has already been delivered to the Air Force, plans for the production model incorporate several changes. Capable of flying non-stop from the United States to Western Europe with 100,000 pounds of cargo, the C-99 could transport 401 fully equipped troops. A full division—about 17,500 men—could be carried in 44 of these planes.

Maintenance Error — The installation of the wrong type tires on an F-84B aircraft caused a recent accident when the tires blew out. A set of 30 x 7.7, 8-ply casing, P/N 3900-154750, made for use on F-84A aircraft, was installed on subject airplane. The 30 x 7.7, 10-ply casing, P/N 3900-207916, is intended for use on F-84B's. Make certain you have the right tire when making a switch.



B-26 Checklist—Shortly after a B-26 had taken off, the life-raft hatch cover blew off and the airplane received major damage. Cause of the failure of the hatch is unknown, but it was believed that someone had inadvertently applied sufficient pressure against the release mechanism to unlock the cover.

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Counting Backwards — It is estimated that Hamilton Standard Hydromatic propellers have been reversed more than 500,000 times since they were first introduced into airline and military service.

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Guided Missile Computer—An electro-mechanical analogue computer which effectively simulates the flight of guided missiles has been built. Without actually firing a missile, the new "brain" predicts and records its every movement and attitude from the time it leaves the ground until the instant it touches the ground again had it been fired. Every waver, dip and spiral is accurately determined and not only is the landing recorded, but also the "where" and "when" of the landing.

PINCURRENT

USAF Accidents—If you Flying Safety Officers are wondering where to start in trying to reduce your accident rates, the following will provide some specific points to work on: For the 12-month period ending 30 September 1949, 49 per cent of all major USAF aircraft accidents occurred during the final approach and landing phase of flight. Collision with the ground or water accounted for six per cent while groundloops accounted for nine per cent of the major accidents. Landing wheels-up tolled 10 per cent of all USAF accidents.

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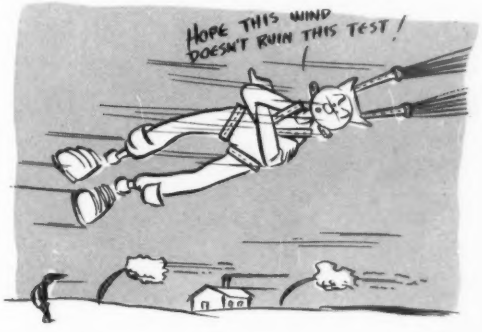
Wheelus and Dhahran — The first helicopter assigned to Air Rescue activities in the Middle East has arrived at Flight C, 7th Rescue Squadron, Wheelus Field, Tripoli. The newly assigned 'copter is one of the new Sikorsky H-5-H models. Until now, rescue flights at Wheelus and Dhahran have been equipped only with SB-17's with droppable A-1 lifeboats.



XB-14 Parachute—Fifty jumps at airspeeds from 90 to 200 mph utilizing the new XB-14 type parachute have been completed by jumpers of the Pararescue and Survival Training School at 1st Rescue Squadron, MacDill AFB, Florida. All jumps were made without injury to any personnel. The new chute, being tested at the request of AMC, is to be for general use of USAF personnel.

B-45 Emergency Exit—Dummy drop tests conducted from B-45 aircraft indicate that an in-flight emergency exit through the bom bay at airspeeds exceeding 250 mph would probably be fatal to personnel. The use of the main entrance door as an emergency exit during flight will also prove fatal if the main landing gear door on the left side is open. Tests of exits through the front and rear hatches were satisfactory. All personnel flying B-45's should be familiar with T.O. 01-60GF-44.

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Fire Hazard on C-82's—A fire hazard on C-82's is created in the nacelles to the rear of the fire walls by the accumulation of oil in the fiber glass insulation on the heater ducts. All 82's should be inspected and contaminated fiber glass replaced.

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Full Power For Takeoff—Boeing advises that pilots flying B-50 type aircraft should use full power for takeoff when 115/145 octane fuel is being used. Full power assures a richer fuel-air mixture which reduces exhaust temperatures and assures faster acceleration resulting in shorter ground roll. Full power on other engines is available in case one fails during takeoff, more runway is available in case the takeoff is aborted, a shorter time is required to attain a safe climbing airspeed, full forward throttle position is easier to set and crew attention is not required to maintain the correct throttle-lever position.

B-26 Canopy—Some pilots of B-26's have formed a habit of opening the canopy while still on the landing roll. Opening of the canopy at high rolling speeds places undue stress on it and causes the canopy to warp, resulting in a poor fit and hard latching.

Cross Feed
FLYING SAFETY IDEA EXCHANGE

RADIO PROCEDURE

By 1st Lt. EARLE W. CONNELL, Jr.
Griffiss AFB

YOU CAN listen to radio voice procedure along the airways and pick out the pilot educated to safety, and the pilot whose extemporaneous calls put snarls in IFR traffic. Also there are the pilots whose attempts to contact a station before listening on the frequency often interrupt other transmissions.

Here are a few items that we must master before we can expect rapid progress toward an all-weather Air Force.

Position Reports—There is a specific procedure for stating aircraft identification, position, time, altitude, type of flight plan, destination, and estimate for the next reporting point. When a pilot uses incorrect procedures and incorrect phraseology in reporting he is taking up valuable time, delaying other pilots' reports to a station, and in all probability labeling himself an amateur to everyone guarding that frequency. If a report is given in incorrect sequence or with items missing, the radio operator must drag out of the pilot what is needed. For absolutely correct procedure, refer to the CAA Flight Information Manual and to the Air Force—Navy Radio Facility Charts. The correct sequence of information given in a position report corresponds to the copy sheet of the radio operator on the ground.

Air Route Traffic Control bases the control of traffic in the vicinity largely on the estimate of reporting points. If you find that your estimate is going to be off three minutes or more, give the nearest facility along your route a revised estimate. If you have forgotten how to use a computer you have no business on an IFR flight.

The time reported over a station is the time over that station—not the time over a nearby airport or time over the city for which the radio facility was named. If your time over that facility comes between a one minute indication, you should report position on the nearest minute. Air Traffic Control is based on time and lateral separation as well as altitude and vertical separation. Every estimate you make, make it good! You may some day find yourself making an instrument approach separated from other aircraft by your estimate alone.

Instrument Approaches—Over a period of years one Air Traffic Control center observed that the average approach time for Air Force pilots was between 14 and 16 minutes; scheduled air line approach time 9 minutes. It is not difficult to reduce your approach time to seven or eight minutes by using correct procedures.

In a recent check at our station we found two "good" cases in three days. One pilot reported over the station and two minutes later received tower clearance. Thirty-four minutes later he reported proceeding VFR. Another pilot received tower clearance from Air Route Traffic Control and made his final over the field approximately 30 minutes later. These two pilots were completely unperturbed by the incident. You may be assured, however, that had these men been holding in the stack waiting for someone else to land they would be bellowing about the time they were held up.

At times when a commerical airliner is delayed in landing at its destination, the passengers demand an explanation and they get it, "Air Force aircraft lost in the vicinity."

Causes similar to this, we can be certain, bring much doubt to the public mind as to the progress being made toward their all-weather Air Force.

There was a time when the average Air Force pilot was given a flight examination and considered a capable instrument pilot if he kept somewhere within the maximum allowable flight deviation limits. Correct radio-telephone procedure was at times ignored completely in instrument checks. Shouldn't we assume that continued exhibitions of such lack of proficiency easily constitute grounds for revocation of an instrument pilot certificate? Facilities and publications are available for adequate training in all phases of instrument procedures. It is up to each individual to take the necessary action to familiarize himself with proper procedures.

YOUR PROFICIENCY

By the Flying Safety Committee
USAF Instrumnt Pilot School

RECENT RESTRICTIONS on flying time have caused a great deal of concern to all USAF flying personnel. Here are some of the ways the individual pilot may use his proficiency time to the best advantage. These suggestions are not intended to be the whole answer to the problem.

Although it is best to devote definite time exclusively to basic instrument practice—pattern work and repeated letdowns under the hood or in the soup—this is not always possible on administrative cross-country flights. However, the pilot can do much to maintain proficiency on basic instruments by making every maneuver, whether it be a turn, letdown or climb, a precise one. This will increase the speed of cross-check and instrument interpretation with a resulting increase in proficiency. All climbs and descents should either be at a definite rate and airspeed or a definite airspeed and power setting, the former being used most often.

It would appear that very little could be accomplished in straight and level flight that would aid in increasing a pilot's proficiency. However, one exceptionally good exercise for pitch control is to change altitude 100 feet, then stop the altimeter and return to the original altitude. This maneuver incorporates the instruments necessary for good pitch control, enabling a pilot to get excellent practice on cross-checking and instrument interpretation. While flying level, the pilot puts the aircraft into a descent by making a very small correction on the artificial horizon bar—not to exceed a 200-foot per minute descent on the vertical speed indicator. While the descent is being established, the pilot cross-checks the vertical speed indicator and the artificial horizon. As the altimeter approaches to within 20 feet of the desired position, the cross-check is switched to the altimeter and the artificial horizon. After stopping the altimeter at the desired altitude, return to the original altitude, using the technique and cross-check explained above.

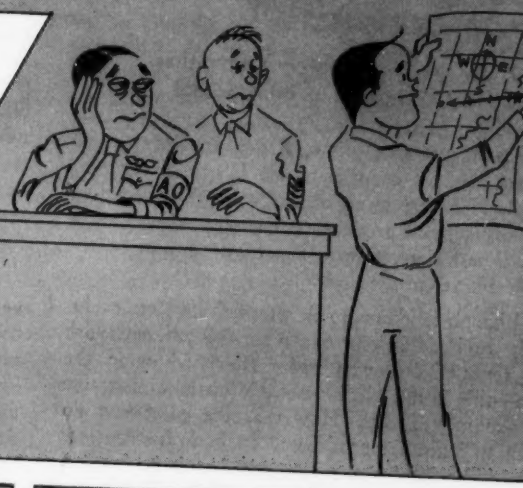
To maintain proficiency in the control of pitch and bank the following is suggested: Starting from a level flight position, roll into a standard rate turn to the right. As soon as a standard rate turn is reached, roll into a standard rate turn to the left. Then return to level flight. If the rate of roll into and out of all banks has been the same, the airplane should be in level flight and on the original heading when the maneuver is complete. To accomplish this maneuver properly the pilot must have good control technique as well as good instrument interpretation and a rapid cross-check. Throughout the maneuver use the altimeter as the primary pitch instrument. The artificial horizon or turn needle is primary for bank control, and the airspeed is primary for power control. These maneuvers will not put the aircraft off course or materially increase the hours flown on administrative flights.

A cross-country administrative flight lends itself very well to radio navigation proficiency. Making cross-country flights IFR on airways and orientations of radio ranges will improve the pilot's knowledge and confidence in radio range procedures. Off-airways instrument navigation can be done by use of the radio compass for taking fixes and tracking. Use the aural null position to check the directional indications of the radio compass. Even when the location of the airplane is known, calling up a VHF/DF homer station for a bearing will give both the pilot and the ground operator practice in the proper VHF/DF procedures. Consult A.N. 08-15-1, the Radio Facility Charts, for practice VHF channels. Remember, Channel D, 121.5 MC, is for emergency use only.

On many flights there will be either a copilot or a wingman who should share the responsibility for navigation. Changing off with the pilot or flight leader will insure proficiency for both. When the change-over is made, each should be able to locate himself by the type of navigation being used. The man with whom you fly, whether he be copilot or wingman, can in most cases give the pilot some constructive criticism of each flight.

All pilots should remember that commanders are able to insure that the proper amount of flying time is obtained, but it is up to the individual pilot to see that this time is used to the best advantage. Lack of proficiency is never considered an excuse for any accident.

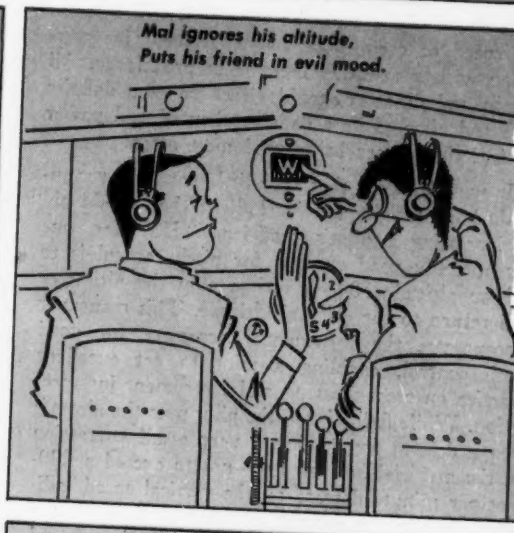
Mal Function



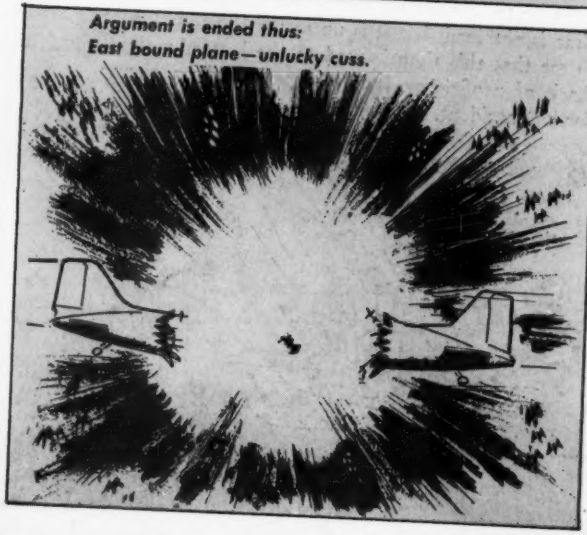
Alert, on beam, and full of zest,
Mal scans map to take him west.

Radio gives clearance poop;
Mal's assigned his strip of soup.

Mal ignores his altitude,
Puts his friend in evil mood.



Argument is ended thus:
East bound plane—unlucky cuss.



Copilot at last wins case,
Sets pointer in the proper place.

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